Bonneville 2nd Powerhouse Corner Collector PIT Tag Detection System Project

Bonneville Power Administration and U.S. Army Corps of Engineers – Portland District

B2CC PIT Tag Project

- PIT Tags – Small electronic devices inserted into fish
- PIT – Passive Integrated Transponder
- PIT Tag Program – Purpose is to evaluate which routes fish take to bypass our dams, evaluate survivability, and provide regional fish managers with smolt to adult return information
- PIT tags can be used for both juvenile and adult fish
- B2 Corner Collector purpose is to bypass juvenile salmon past Bonneville Dam

B2CC PIT Tag Project

- Project Purpose: Install a PIT tag detection system in the flume of the B2 corner collector
- Project Goals:
  - Reliable
  - Cost Effective
  - Maintainable
  - Accurate

B2CC PIT Tag Project

- BPA is responsible for supplying the antenna array and supporting electronics
- The Corps is responsible for providing the supporting infrastructure

B2CC PIT Tag Project

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- Initial biological testing indicates that 30%-35% of yearling and sub-yearling salmon and 71% of steelhead transit Bonneville 2nd Powerhouse via the corner collector
- Nearly 100% of fish that are diverted by the corner collector survive
- This is a high priority project with regional fish managers

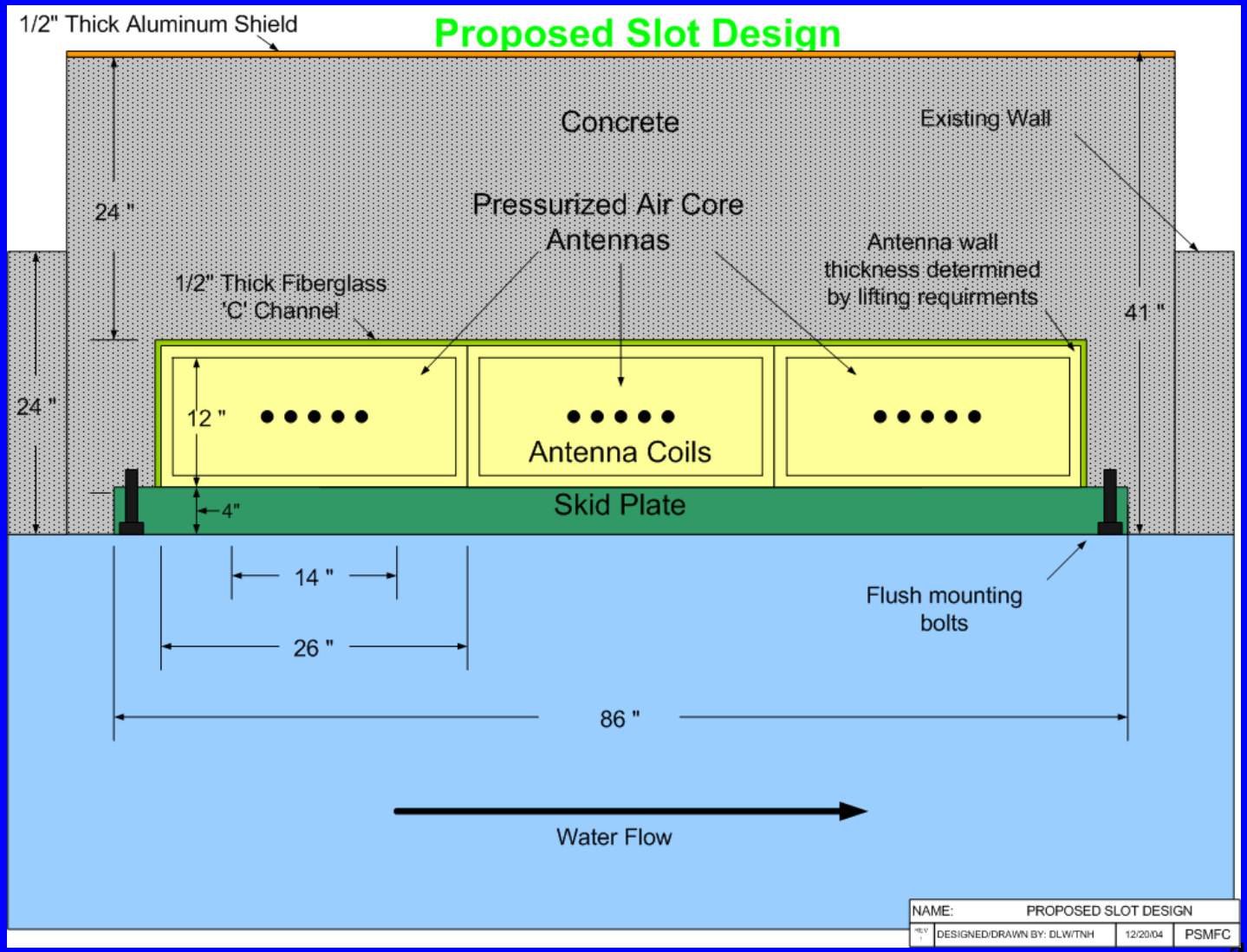
B2CC PIT Tag Project

- Current Design
  - Install a single antenna array
  - Antenna array consists of three pressurized air core antennas inside a waterproof, composite structure
  - The antenna array fits in a slotted concrete support structure and the antenna array can be removed, repaired, and replaced if necessary

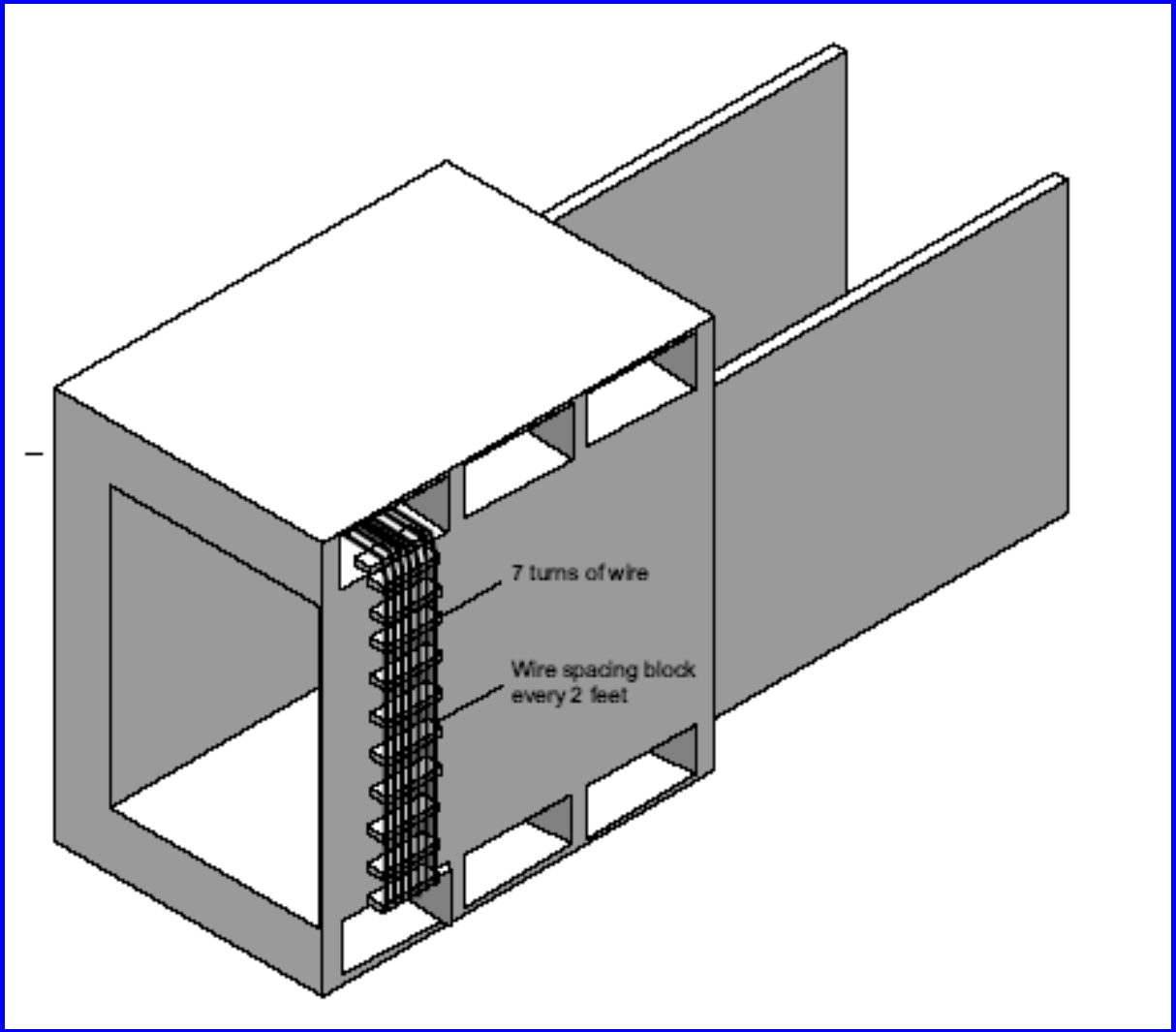
B2CC PIT Tag Project

- Current Design
  - The flume can be operated without the antenna array installed
  - Address hydraulic concerns regarding rising water depths in the flume

B2CC PIT Tag Project



B2CC PIT Tag Project



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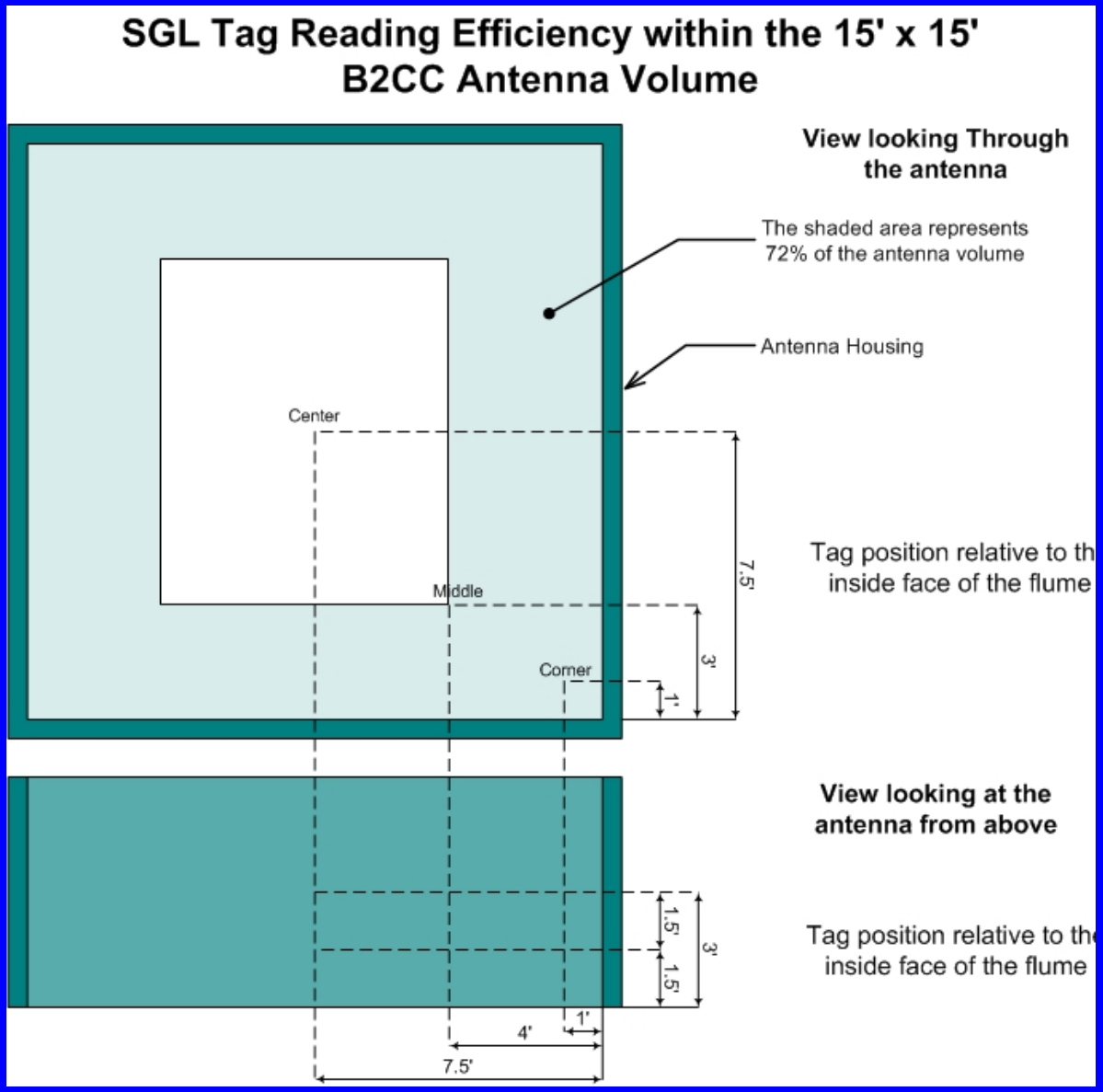
- The required detection efficiency is 60% of PIT tagged fish transiting the flume
- Detection efficiency is a function of location, orientation, and collisions

B2CC PIT Tag Project



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17' x 17' Antenna that has a 15' x 15' Flume Opening

	0°-oriented tags						30°-oriented tags					
Corner	100	100	100	100	100	100	100	100	100	100	100	100
Middle	93	99	100	100	99	93	84	99	100	100	99	84
Center	16	62	57	57	62	16	14	19	32	32	19	14
Middle	93	99	100	100	99	93	84	99	100	100	99	84
Corner	100	100	100	100	100	100	100	100	100	100	100	100

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ACTIVITY	DATE
Open Corner Collector for Spring Creek Hatchery Release	March 2, 2006
Install Antenna Array	March 8, 2006
Antenna Array Operational	April 10, 2006
Operate Flume	April - August 2006

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- Questions?